

CLAIMS

1. A polyester composite thick-and-thin multifilament yarn comprising:

5 (A) a polyester thick-and-thin multifilament
yarn comprising a plurality of polyester individual
thick-and-thin filaments each having a plurality of thick
portions and a plurality of thin portions alternately
arranged with each other along the longitudinal axis of
each individual filament; and

10 (B) a polyester multifilament yarn having a
higher dyeability than that of the thick-and-thin
multifilament-yarn (A) and comprising a plurality of
polyester individual filaments each having a thickness
which is substantially uniform along the longitudinal
15 axis of each individual filament; combined and interlaced
with the polyester thick-and-thin multifilament yarn (A),
to form a composite thick-and-thin yarn, wherein

20 (a) in each of the composite thick
portions of the composite thick-and-thin yarn, portions
of the plurality of individual filaments in the
multifilament yarn (B) are distributed substantially in a
center part of the composite thick portion of the
composite yarn, to form a core part, and the thick
25 portions of the plurality of the individual thick-and-
thin filaments in the thick-and-thin multifilament
yarn (A) are distributed around the core part, to form a
sheath part, and to thereby constitute a core-in-sheath
structure in the composite thick portion; and

30 (b) in each of the composite thin
portions of the composite thick-and-thin yarn, thin
portions of the plurality of individual thick-and-thin
filaments in the thick-and-thin multifilament yarn (A)
and portions of the plurality of individual filaments in
the multifilament yarn (B) are distributed in a random
35 mixture with each other.

2. The polyester composite thick-and-thin yarn as
claimed in claim 1, wherein a ratio of a total length of

the composite thick portions (a) contained in the composite thick-and-thin yarn to the length of the composite thick-and-thin yarn is in the range of from 40 to 90%.

5 3. The polyester composite thick-and-thin yarn as claimed in claim 1, wherein a yarn length difference percentage between the polyester multifilament thick-and-thin yarn (A) and the polyester multifilament yarn (B), as defined by the equation (1):

10 Yarn length difference percentage (%)

$$= (L_s - L_c) / L_c \times 100 \quad (1)$$

15 in which equation (1), L_s represents an average length of the individual filaments contained in the polyester thick-and-thin multifilament yarn (A) and L_c represent an average length of the individual filaments contained in the polyester multifilament yarn (B), the average filament lengths L_s and L_c being determined in accordance with JIS L 1015-1998, 7.4.1 (3) method,

20 is in the range of from 5 to 15%.

4. The polyester composite thick-and-thin yarn as claimed in claim 1, wherein the polyester multifilament yarn (B) is dyeable by cationic dyes.

25 5. A process for producing the polyester composite thick-and-thin yarn as claimed in any one of claims 1 to 4, comprising the steps of:

30 laying parallel a polyester thick-and-thin multifilament yarn (Aa) which comprises a plurality of polyester individual filaments each having thick portions and thin portions alternately arranged with each other along the longitudinal axis of the each individual filament, and has an ultimate elongation of 80 to 150% and a shrinkage in boiling water of 30 to 60%, and a polyester multifilament yarn (Ba) which comprises a plurality of polyester individual filaments having a thickness substantially uniform along the longitudinal direction of the polyester individual filaments, exhibits

a higher dyeability than that of the polyester thick-and-thin multifilament yarn (Aa) and has an ultimate elongation of 20 to 70% and a shrinkage in boiling water of 10 to 20%, to each other;

5 subjecting the paralleled composite yarn to a mixing and interlacing procedure under an air jetting pressure of 30 to 600 kPa at a processing speed of 200 to 800 m/min.; and

10 heat-treating the mixed and interlaced composite yarn at an overfeed rate of 0.5 to 3.0% at a heating temperature of 150 to 230°C.

6. A woven or knitted fabric comprising the polyester composite thick-and-thin yarns as claimed in any one of claims 1 to 4.

15 7. The woven or knitted fabric as claimed in claim 6, wherein a width ratio W_1/W_2 of an apparent largest width W_1 to an apparent smallest width W_2 of the polyester composite thick-and-thin yarns contained in the woven or knitted fabric is in the range of from 1.1 to
20 1.7.

25 8. The woven or knitted fabric as claimed in claim 6, further processed by a mass-reduction treatment with an alkali, which alkali-treated woven or knitted fabric has a plurality of cracks formed on the peripheral surfaces of the thick portions of the plurality of polyester individual thick-and-thin filaments contained in the polyester composite thick-and-thin yarn.

30 9. The woven or knitted fabric as claimed in claim 6, further processed by a mass-reduction treatment with an alkali, in which alkali-treated woven or knitted fabric, a width ratio W'_1/W'_2 of an apparent largest width W'_1 to an apparent smallest width W'_2 of the polyester composite thick-and-thin yarns contained in the fabric, is in the range of from 1.1 to 1.7, and a plurality of cracks, each extending in a direction intersecting the longitudinal axis of the individual thick-and-thin filaments, are formed on peripheral

surfaces of the thick portions of the plurality of polyester individual thick-and-thin filaments in the polyester composite thick-and-thin yarn.